

17th Annual Conference on Fossil Energy Materials

April 22-24, 2003

**Wyndham Baltimore Inner Harbor
Baltimore, Maryland**

Agenda



TUESDAY, APRIL 22

- 12:00 pm **Registration - International A Foyer**
- 1:00 pm **Welcome and Introductory Remarks - INTERNATIONAL A**
Robert R. Romanosky
U.S. Department of Energy, National Energy Technology Laboratory
Roddie R. Judkins, Oak Ridge National Laboratory

SESSION I - NEW ALLOYS

— MATERIALS FOR ADVANCED STEAM CYCLES

- 1:20 pm **Introductory Remarks**
Moderator - Fred Glaser
U.S. Department of Energy
Office of Fossil Energy
- 1:30 pm **Invited Speaker**
Materials for Ultra-Supercritical Coal-Fired Power Plant Boilers
R. Viswanathan, EPRI
- 2:00 pm **Coal Ash Corrosion Resistant Materials Testing Program -
Evaluation of the First Section Removed in November 2001**
Dennis K. McDonald, Babcock & Wilcox Company
- 2:30 pm **Understanding Damage Mechanisms in Ferritic Steels**
Robert W. Swindeman, Oak Ridge National Laboratory
- 3:00 pm **Break - INTERNATIONAL B**
- 3:30 pm **Materials for Ultra-Supercritical Steam Turbines**
Philip J. Maziasz, Oak Ridge National Laboratory
- 4:00 pm **Coal-Ash Corrosion of Alloys for Combustion Power Plants**
Ken Natesan, Argonne National Laboratory
- 4:30 pm **Desulfurization of Coal**
Timothy R. Armstrong, Oak Ridge National Laboratory
- 5:00 pm **Adjourn**
- 6:00-7:30 pm **Reception and Poster Session - INTERNATIONAL B**



WEDNESDAY, APRIL 23

7:30 am Continental Breakfast - INTERNATIONAL B

SESSION I – NEW ALLOYS (CONTINUED)

— MATERIALS FOR ADVANCED HEAT EXCHANGERS

8:20 am **Introductory Remarks - INTERNATIONAL A**

Moderator - Udaya Rao

U.S. Department of Energy

National Energy Technology Laboratory

8:30 am **Invited Speaker**

Materials Issues in Biomass-Fired Energy Systems

John E. Oakey, Cranfield University

9:00 am **ODS Alloy Development**

Ian Wright, Oak Ridge National Laboratory

9:30 am **Optimization of ODS FeCrAl and Fe₃Al Alloy Properties**

Bimal K. Kad, University of California - San Diego

10:00 am **Reduction in Defect Content in ODS Alloys**

Andy R. Jones, University of Liverpool

10:30 am **Break - INTERNATIONAL B**

SESSION II – FUNCTIONAL MATERIALS

11:00 am **Introductory Remarks**

Moderator - Timothy R. Armstrong

Oak Ridge National Laboratory

— GAS SEPARATION MATERIALS

11:10 am **Development of Inorganic Membranes for Hydrogen Separation**

Roddie R. Judkins, Oak Ridge National Laboratory

11:40 am **Hydrogen Separating Membranes for Coal Gas Reforming**

Stephen Paglieri, Los Alamos National Laboratory

12:10 pm **Group Lunch - INTERNATIONAL B**

2:00 pm **Synthesis and Properties of Materials for Hydrogen Separation Membranes**

Timothy R. Armstrong, Oak Ridge National Laboratory

2:30 pm **Corrosion Behavior of Stainless Steels in Solid Oxide Fuel Cell**

Simulated Gaseous Environments

Margaret Ziomek-Moroz, U.S. Department of Energy, Albany Research Center

— MATERIALS FOR GAS CLEAN-UP

3:00 pm **Development of Novel Activated Carbon Composites**

Tim Burchell, Oak Ridge National Laboratory

3:30 pm **Break - INTERNATIONAL B**

4:00 pm **Metallic Filters for Hot Gas Cleaning**

Iver Anderson, Ames Laboratory, Iowa State University

— FUEL CELL MATERIALS ISSUES

4:30 pm **Development of Brazing Technology for Use in High-Temperature Gas Separation Equipment**

Scott Weil, Pacific Northwest National Laboratory

5:00 pm **Invited Speaker**

Materials Issues in Alkaline Fuel Cells

David P. Bloomfield, Analytic Energy Systems

5:30 pm **Adjourn**

THURSDAY, APRIL 24

7:30 am Continental Breakfast - INTERNATIONAL B

SESSION III – BREAKTHROUGHS IN MATERIALS PERFORMANCE AND RELIABILITY

8:20 am Introductory Remarks - INTERNATIONAL A

Moderator - Ian Wright

Oak Ridge National Laboratory

— TEMPERATURE CAPABILITIES BEYOND CURRENT ALLOYS

8:30 am Invited Speaker

Strategies for Strengthening Metallic and Intermetallic Alloys at High Temperatures

C.-T. Liu, Oak Ridge National Laboratory

9:00 am Invited Speaker

MoSiB Alloy Developments and Prospects

Doug Berczik, Pratt & Whitney

9:30 am Mo-Si-B Alloy Development

Joachim H. Schneibel, Oak Ridge National Laboratory

10:00 am Break - INTERNATIONAL B

10:30 am Effects of Wet Air and Synthetic Combustion Gas Atmospheres on the Oxidation Behavior of Mo-Si-B Alloys

Matthew J. Kramer, Ames Laboratory

— REFRACTORIES FOR INCREASED RELIABILITY IN GASIFICATION REACTORS

11:00 am Invited Speaker

Trends and Continuing Needs for Refractories for Gasifier Duty

C.E. Semler, Consultant

11:30 am Improved Refractories for Slagging Gasifiers in IGCC Power Systems

Cynthia Powell Dógan, U.S. Department of Energy, Albany Research Center

12:00 pm Lunch (on your own)

— SMART MATERIALS

1:30 pm Invited Speaker

Concepts and Materials Needs for Condition-Monitoring Sensors

Jim Hardy, Oak Ridge National Laboratory

2:00 pm Concepts for Smart, Protective High-Temperature Coatings

Peter Tortorelli, Oak Ridge National Laboratory

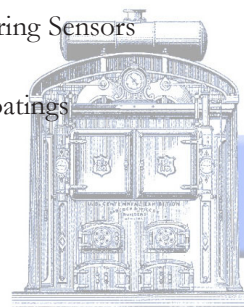
2:30 pm Closing Remarks

Robert R. Romanosky, U.S. Department of Energy

National Energy Technology Laboratory

Roddie R. Judkins, Oak Ridge National Laboratory

2:45 pm Adjourn



1876 Boiler

Advancing
Technology
To Meet The
Needs For
Future Power
Generation



Posters, Tuesday, April 22nd

COATINGS AND PROTECTION OF MATERIALS

High-Temperature Sulfidation Resistance of Fe-Al-Cr Alloys at 500°C - Jonathan Regina, Lehigh University

Coating Microstructure-Property Issues - Terry C. Totemeier, Richard N. Wright and W. David Swank, Idaho National Engineering and Environmental Laboratory

High Temperature Oxidation Performance of Aluminide Coatings - Bruce A. Pint, Oak Ridge National Laboratory

Interdiffusion Behavior in Aluminide Coatings for Power Generation Applications - Ying Zhang, Tennessee Technological University

Slurry-Based Ceramic Coatings for Corrosion Resistance - Beth L. Armstrong, Oak Ridge National Laboratory

Chemically Vapor Deposited YSZ for Thermal and Environmental Barrier Coatings - Theodore M. Besmann, Oak Ridge National Laboratory

Modeling of Chemical Vapor Deposited Zirconia for Thermal Barrier and Environmental Barrier Coatings - Thomas L. Starr, University of Louisville

Development of Nondestructive Evaluation Methods for Ceramic Coatings - William A. Ellingson, Argonne National Laboratory

High Temperature Materials Testing in Coal Combustion Environments - M. Mathur and M. Freeman, U.S. Department of Energy, National Energy Technology Laboratory

High Temperature Material Testing Results in Coal Combustion Environments - Beth L. Armstrong, Oak Ridge National Laboratory

NEW ALLOYS

Improved ODS Alloy for Heat Exchanger Tubing - G. Smith, Special Metals Corp.

High Creep-Strength Alloys - Philip J. Maziasz, Oak Ridge National Laboratory

Oxidation and Sulfidation Resistant Alloys with Silicon Additions - John S. Dunning, U.S. Department of Energy, Albany Research Center

Ultrasupercritical Steam Corrosion - Gordon R. Holcomb, U.S. Department of Energy, Albany Research Center

Corrosion in a Temperature Gradient - Gordon R. Holcomb, U.S. Department of Energy, Albany Research Center

Fireside Corrosion Testing of Candidate Superheater Tube Alloys Coatings and Claddings-Phase III - Jeff Blough, Foster Wheeler Development Corporation

FUNCTIONAL MATERIALS

Economical Fabrication of Membrane Materials - Timothy R. Armstrong, Oak Ridge National Laboratory

Hydrogen Permeability of Palladium-Copper Alloy Composite Membranes Over a Wide Range of Temperatures and Pressures - Bret H. Howard, U.S. Department of Energy, National Energy Technology Laboratory

BREAKTHROUGHS IN MATERIALS PERFORMANCE AND RELIABILITY

High Temperature Materials Testing in a Pilot-Scale Coal Combustion System - John P. Hurley and Patty L. Kleven, Energy and Environmental Research Center

Evaluation of the Intrinsic and Extrinsic Fracture Behavior of Iron Aluminides - B.R. Cooper, West Virginia University

Multi-Phase Cr-Based Alloys for Aggressive High-Temperature Environments - Peter Tortorelli, Oak Ridge National Laboratory

Eutectic Behavior of Cr-Ta and Cr-Ta-Mo Composites Reinforced by the Cr₂Ta Laves Phase - Peter K. Liaw, University of Tennessee

Development of a Commercial Process for the Production of Silicon Carbide Fibrils - Richard D. Nixdorf, ReMaxCo Technologies, Inc.